container indexing means mechanically attached to said driving means for synchronous advancement of said containers to said cap driver assembly for torquing;

a capping head disposed in vertically adjustable relation to said primary supporting frame, wherein said capping head includes a housing containing a gear mechanism and at least one input shaft having a hollow core for transmission of torque from said driving means to said cap driver assembly, said core being disposed in fluid communication with an inflatable gripping means permitting the flow of compressed air and vacuum thereto, wherein said at least one input shaft is mechanically connected to said driving means by an axially extensible spline mechanism that permits simultaneous rotation and vertical extension of said at least one shaft during operation of said driving means; and

closed loop controlling means for applying said predetermined torque further including:

(a) a central processing unit for conducting proportional, integral, and derivative control calculations,

(b) an operator console for setting parameters that govern application of said torque transmitted by said cap driver assembly to said caps, and

A1

(a) a servocontroller interfaced for bidirectional communication with said central processing unit, said servocontroller generating an output signal to said servomotor based on the position of said cap driver assembly for torquing said caps such that said predetermined torque is attained.

2. (Amended) The rotary capping apparatus of Claim 1 wherein said servocontroller is capable of generating a theoretical position profile represented by POS_THEORET(t) and wherein said servocontroller receives position feedback represented by POS_REAL(t) obtained from an incremental position monitoring device, said POS_REAL(t) being compared to said POS_THEORET(t) and any discrepancy therebetween generating a proportional, integral, and derivative output control signal represented by S(t) and wherein the mathematical relation is expressed as S(t) = POS_THEORET(t) - POS_REAL (t), wherein (t) is a time base, said servocontroller being programmed to automatically set S(t)=0 whenever POS_THEORET(t) - POS_REAL(t)

A1 exceeds E_LIMIT wherein E_LIMIT is a programmable parameter governing said predetermined torque.

16. (Amended) An improved rotary capping apparatus for applying screw-on caps to containers, said apparatus including a supporting frame, a cap driver for application of torque to said caps, driving means for transmitting a predetermined torque to said cap driver, and container indexing means for delivery of said containers to said cap driver, said improvements comprising:

a capping head disposed in vertically adjustable relation to said primary supporting frame, wherein said capping head includes a housing containing a gear mechanism and at least one input shaft having a hollow core for transmission of torque from said driving means to said cap driver assembly, said core being disposed in fluid communication with an inflatable gripping means permitting the flow of compressed air

A2 and vacuum thereto, wherein said at least one input shaft is mechanically connected to said driving means by an axially extensible spline mechanism that permits simultaneous rotation and vertical extension of said at least one shaft during operation of said driving means; and

closed loop controlling means for calculation of said predetermined torque further including:

(a) a central processing unit for setting parameters that govern application of said torque transmitted by said cap driver, and

(b) a servocontroller interfaced for bidirectional communication with said central processing unit, said servocontroller generating an output signal to said driving means based on the position of said cap driver for torquing said caps such that said predetermined torque is attained.

Please add the following new claims:

20~~18~~. A method of controlling applied torque in a rotary capping apparatus having a cap driver assembly for torquing screw-on caps to containers and a closed-loop control system including a servocontroller interfaced for bidirectional communication with a central processing unit, said method comprising the steps of:

A3 producing a theoretical position profile for the cap driver assembly with the servocontroller at the start of each capping cycle;